REMARKS

Claims 1, 3-11 and 21-25 have been amended; and claims 12-20 have been cancelled. Accordingly, upon entry of the above amendment, claims 1-11 and 21-25 will be in the application.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The additions will be underlined and deletions are bracketed. The attached page is captioned "Version With Markings to Show Changes Made."

Restriction Requirement

Applicants hereby affirm the provisional election to prosecute the invention of Group I, claims 1-11 and 17-25. Consistent with this election, Applicants have cancelled the non-elected claims 12-16, which may form the basis of a divisional application.

Rejection Under 35 U.S.C. §112

Claims 1-11 and 17-25 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In particular, the Examiner has noted that claims 1, 3-11, 17-20 and 22-24 recite preferred ranges that render the claims indefinite; claims 4 and 5 are improperly dependent upon themselves, and claims 11 and 18 recite ranges that are "best of all."

In response to the rejections, claims 1, 3-11 and 21-25 have been amended. These amendments eliminate the indefiniteness, but do not narrow the scope of the claims.

Rejection Under 35 U.S.C. §102

The Examiner has indicated that "Claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over EP 0599071 A1." From the discussion of 35 U.S.C. §102 that precedes the rejection, and from the discussion following the rejection, it is relatively apparent that the rejection is actually under 35 U.S.C. §102.

The Examiner has admitted that "The reference does not explicitly disclose the exact surface resistivity as applicant." To the contrary, as stated by the Examiner "The reference discloses layers can be produced with a surface resistivity of 3.2_{sq}," and with "a mean Haacke quality factor of 0.066" at wavelengths of 435, 545 and 610 nm. Despite the fact that the applied reference expressly teaches a surface resistivity and a Haacke quality factor that do not meet the requirements of the claims, the Examiner has incorrectly reasoned that "Because the reference contains the same materials as applicant, the surface resistivity would be expected to be the same, absent any evidence to the contrary."

It is respectfully submitted that the required evidence to the contrary is present in the EP '071 reference and has been specifically pointed out by the Examiner. Clearly, a reference that expressly teaches a structure having a surface resistivity of 3.2_{sq} and a mean Haacke quality factor 0.066 would not be expected to have a surface resistivity of less than 2.9_{sq} or a Haacke quality factor greater than 0.085^{-1}. Those having ordinary skill in the art would not expect a disclosed structure to have properties different from and superior to those described in the reference. Accordingly, it is respectfully submitted that the reference does not teach or suggest the claimed conductive transparent layer system having a resistivity of less than 2.9_{sq} and a mean Haacke quality factor greater than 0.085^{-1} at wavelengths 435, 545 and 610 nm.

As stated in Applicants' specification and as would be readily apparent to those having ordinary skill in the art, surface resistivity and mean Haacke quality factor are dependent on a variety of factors other than the selection of materials. For example, as pointed out at page 3, lines 26 through 28, the thicknesses of the layers have a bearing on the properties of the device. Further, the relative amounts of the various elements have an effect on the properties. See for example page 4, lines 1 and 2, wherein the addition of copper in preferred amounts is discussed. Finally, and perhaps most importantly, the properties are determined to a large extent by the method used to fabricate the device. For example, see page 4, lines 3-15, which discuss benefits of using particular deposition techniques. At pages 5 and 6 of the specification, the Applicants have provided a detailed description that would enable those having ordinary skill in the art to make a conductive transparent layer system having a surface

resistivity of 2.5_{sq} and a mean Haacke quality factor of 0.092^{-1} at 435, 545 and 610 nm. By contrast, the applied reference does not teach or suggest a combination of materials, amounts of materials, thicknesses of layers, or fabrication techniques that would provide a conductive transparent layer system as claimed having the required surface resistivity and mean Haacke quality factor. Accordingly, the EP '071 reference does not teach or suggest the claimed invention.

Rejection Under 35 U.S.C. §103

Claims 1-4, 6-7, 9, 17 and 20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0599071 A1 in view of JP 09176841. The Examiner has admitted that neither of the references teach or suggest a conductive transparent layer system having the required surface resistivity and mean Haacke quality factor. The Examiner has suggested that achieving the required surface resistivity and mean Haacke quality factor is merely a matter of selecting appropriate materials and optimizing the amounts thereof. Similarly, the Examiner has taken the position that it would have been obvious to one having ordinary skill in the art to optimize the thicknesses of the layers. It is respectfully submitted that the Examiner has applied an incorrect standard for determining obviousness. The Examiner's attention is directed to MPEP §2144.05(ii)(A) which states that "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical." Applicants' claims are not directed to optimization within prior art conditions. To the contrary, Applicants have claimed a conductive transparent layer system having heretofore unknown properties, namely a surface resistivity less than 2.9_{sq} and a Haacke quality factor greater than 0.085^{-1}. In other words, Applicants are claiming an improved conductive transparent layer system that is not taught or suggested by the prior art. The applied prior art references simply do not teach one having ordinary skill in the art how to achieve the required surface resistivity and mean Haacke quality factor. Stated differently, Applicants are claiming a superior transparent layer system that cannot be achieved by following the teachings of the prior art.

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The Examiner's attention is also directed to MPEP §2144.05(II)(B) which states that "A particular parameter must first be recognized as a results-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." Neither of the applied references teaches or suggests how results-effective variables can be manipulated in combination to achieve both improved surface resistivity and improved mean Haacke quality factor. That is to say that the references do not, either alone or in combination, teach one having ordinary skill in the art how to manipulate composition and layer thicknesses to simultaneously achieve an improved surface resistivity and an improved mean Haacke quality factor. Further, the applied references do not teach or suggest, either alone or in combination, appropriate techniques, used in combination with appropriate compositions and layer thicknesses, to achieve the required combination of a surface resistivity of less than 2.9_{sq} and the required mean Haacke quality factor of 0.085^{-1} for wavelengths 435, 545 and 610 nm.

Finally, the Examiner's attention is directed to MPEP §2144.05(III) which states that "Applicants can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range." In other words, if Applicants had claimed a conductive transparent layer system having layers of particular composition and thicknesses which are not expressly taught by the prior art but were contained within or overlapped known compositions and layer thicknesses, a *prima facie* case of obviousness could be overcome by showing that the claimed range achieves unexpected results relative to the prior art range. This for example could be done by showing that the claimed ranges provide a conductive transparent layer system having a surface resistivity less than 2.9_{sq} and a mean Haacke quality factor greater than 0.085^{-1} for wavelengths 435, 545 and 610 nm, whereas the prior art only achieves a surface resisitivity of 3.2_{sq} and a mean Haacke quality factor of 0.066^{-1} at wavelengths of 435, 545 and 610 nm. However, Applicants are not claiming an overlapping range, but are instead claiming a conductive transparent layer system having improved characteristics. In other words, Applicants are not claiming an overlapping range, but instead are claiming an improvement that is neither taught nor suggested or enabled by the prior art. Accordingly, it would be most appropriate to withdraw the rejection under 35 U.S.C. §103

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and allow the claims, as Applicants are not merely optimizing a known range, but instead are claiming a heretofore unknown conductive transparent layer system having a combination of improved properties.

Claims 1-11 and 17-25 have also been rejected under 35 U.S.C. §103(a) as being unpatentable over EP 0599071 A1 in view of GB 2126256 A. Neither of these references teach or suggest a conductive transparent layer system having the required surface resistivity and mean Haacke quality factor, and neither of these references provide any motivation for simultaneously optimizing compositions, thicknesses and fabrication techniques to achieve a conductive transparent layer system simultaneously exhibiting improved surface resistivity and mean Haacke quality factor. In particular, it is worth noting that while GB '256 discloses magnetron sputtering, this reference does not provide any motivation for modifying the teachings of the EP '071 reference to utilize the magnetron sputtering techniques of the GB '256 reference. Further, the references, neither alone nor in combination, teach or suggest how a conductive transparent layer system with two oxide layers and a silver layer interposed therebetween on a substrate can be fabricated to simultaneously achieve a surface resistivity of less than 2.9_{sq} and a mean Haacke quality factor greater than 0.085^{-1} at wavelengths of 435, 545 and 610 nm. That is to say, those having ordinary skill in the art are not put in possession of a device having the required performance characteristics by following the teachings and suggestions of the applied prior art references. Further, neither of the references provides any expectation that a device having the claimed combination of performance characteristics can be achieved.

It is not by following the teachings and suggestions of the prior art that those having ordinary skill in the art would achieve the claimed combination of performance factors. Instead, it is only by selectively modifying the prior art teachings guided by Applicants' own disclosure that one having ordinary skill in the art could achieve the claimed invention.

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Accordingly, the rejection under 35 U.S.C. §103 based on the combined teachings of EP 0599071 A1 and GB 2126256 A should be withdrawn, and the claims should be allowed.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance and notice of the same is earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1, 3-11 and 21-25 have been amended as follows:

1. (Amended) A conductive transparent layer system with two oxide layers and a silver layer interposed therebetween on a substrate, characterized in that with a surface resistivity R_s of less than 2.9_{sq}, [preferably less than 2.5_{sq},] the mean Haacke quality factor ($\Phi_{TC} = T^{10}/R_s$) of the layer system for the wavelengths 435, 545 and 610 nm is greater than 0.085^{-1}.

3. (Amended) The layer system according to claim 3, characterized in that the layer system is less than 100 nm thick, [preferably 80-90 nm,] with the silver layer being less than 20 nm thick, [preferably 15 nm,] and the two oxide layers being less than 50 nm thick[, preferably between 30-40 nm].

4. (Amended) The layer system according to claim [4] 3, characterized in that the oxide layers contain [indium and cerium, preferably] about 90-95[at.]% indium and about 5-10 [at.]% cerium.

5. (Amended) The layer system according to claim [5] 4, characterized in that the silver layer contains up to 10 wt.% copper[, preferably in the range from 0.5-3% and best of all from 0.5-1%].

6. (Amended) The layer system according to claim 1, characterized in that the layer system is less than 100 nm thick, [preferably 80-90 nm,] with the silver layer being less than 20 nm thick, [preferably 15 nm,] and the two oxide layers being less than 50 nm thick[, preferably between 30-40 nm].

7. (Amended) The layer system according to claim 6, characterized in that the oxide layers contain [indium and cerium, preferably] about 90-95 [at.]% indium and about 5-10 [at.]% cerium.

8. (Amended) The layer system according to claim 7, characterized in that the silver layer contains up to 10 wt.% copper[, preferably in the range from 0.5-3% and best of all from 0.5-1%].

9. (Amended) The layer system according to claim 1, characterized in that the oxide layers contain [indium and cerium, preferably] about 90-95 [at.]% indium and about 5-10 [at.]% cerium.

10. (Amended) The layer system according to claim 9, characterized in that the silver layer contains up to 10 wt.% copper[, preferably in the range from 0.5-3% and best of all from 0.5-1%].

11. (Amended) The layer system according to claim 1, characterized in that the silver layer contains up to 10 wt.% copper[, preferably in the range from 0.5-3% and best of all from 0.5-1%].

21. (Amended) The layer system according to claim [17] 1 in which the second oxide layer is deposited by means of pulsed DC sputtering or AC-superimposed DC sputtering.

22. (Amended) The layer system of claim [21] 1, characterized in that the frequency of the superimposed AC is between 1 and 50 MHz[, preferably between 10 and 20 MHz].

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23. (Amended) The layer system of claim [22] 1, characterized in that the AC component, defined by the ratio of the DC and AC power supplies, is between 10-90%[, preferably between 30-50%].

24. (Amended) The layer system of claim [21] 1, characterized in that the total power density (AC and DC) is in the range from 1-3 W/cm^2[, preferably, however, 2-2.2 W/cm^2].

25. (Amended) The layer system of claim [21] 1, characterized in that magnetron sputtering is chosen as sputtering method.

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